

IMAGE SENSOR WITH PERFORMANCE ENHANCING STRUCTURES

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ABSTRACT

An image sensor is disclosed including passivation walls extending above the pixel contact pads into a photosensor layer (e.g., amorphous silicon) such that the pixel contact pads are isolated to reduce cross-talk. The passivation walls are formed from SiO₂ or SiON to further reduce cross-talk. An embodiment includes metal structures provided under interface regions (e.g., under the passivation walls) separating adjacent pixels that are negatively biased to prevent cross-talk, and optionally extend under the contact pad to increase pixel capacitance. One embodiment omits p-type dopant from the lower amorphous silicon photodiode layer, and additional photodiode material layers are disclosed. Another disclosed sensor structure utilizes a textured surface to increase light absorption. A color filter structure for image sensors is also disclosed.